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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,358	03/10/2004	Mei-Yuh Hwang	M61.12-0633	4338

27366 7590 06/17/2009  
WESTMAN CHAMPLIN (MICROSOFT CORPORATION)  
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EXAMINER
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JACKSON, JAKIEDA R

ART UNIT	PAPER NUMBER
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2626

MAIL DATE	DELIVERY MODE
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06/17/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/797,358	<b>Applicant(s)</b> HWANG ET AL.	
	<b>Examiner</b> JAKIEDA R. JACKSON	<b>Art Unit</b> 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 November 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6, 16 and 17 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-15 is/are allowed.
- 6) ☒ Claim(s) 1-6, 16 and 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. In response to the Office Action mailed November 24, 2008, applicant submitted an amendment filed on February 24, 2009, in which the applicant argued and requested reconsideration.

### ***Response to Arguments***

2. Applicant's argues that the prior art cited does not teach in a dictionary comprising segmentations of words into sequences of graphoneme units, replacing the first and second graphoneme units with the larger graphoneme unit in each sequence of graphoneme units in which the first graphoneme unit appears immediately after the second graphoneme units, updating a segmentation of a word comprising a set of graphoneme units for the word that includes the pair of graphoneme units by replacing the pair of graphoneme units in the segmentation with the new graphoneme unit, segmenting a set of words into phonetic syllables using mutual information scores wherein using a mutual information score comprises computing a mutual information score for two phones by dividing the probability of two phones appearing next to each other in the set of words by the unigram probabilities of each of the two phones appearing in the set of words and segmenting a set of words into morphemes using mutual information scores wherein using mutual information scores comprises computing a mutual information score for two letters based on the probability of the two letters appearing next to each other in the set of words and the unigram probabilities of

each of the two letters appearing in the set of words. Applicant's arguments are persuasive.

***Claim Rejections - 35 USC § 101***

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-6 and 16-17 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

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In regard to claims 1-6 and 16-17, while the claim(s) recite a series of steps or acts to be performed, a statutory "process" under 35 USC 101 must (1) be tied to another statutory category (such as a manufacture or a machine), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. To qualify as a § 101 statutory process, the claim should positively recite the other statutory class (the thing or product) to which it is tied, for example by identifying the apparatus that accomplishes the method steps, or positively recite the subject matter that is being transformed, for example by identifying the material that is being changed to a different state. The instant claim(s) neither transform underlying subject matter nor positively recite structure associated with another statutory category, and therefore do not define a statutory process.

In particular, there is no physical transformation of an article in the claim language and the claim language does not cite any physical hardware to perform the

steps, rather, the method is a manipulation of abstract data, which does not perform any useful, concrete tangible results.

Claims 1-6 and 16-17 are directed to methods for segmenting words into component parts, thus it is clear that there is no transformation of underlying subject matter. Therefore, the claims must be tied to another statutory category by identifying the apparatus performing the steps of the method, where “identifying the apparatus” requires that the process claim explicitly recite the particular machine or apparatus, or recite a step that inherently involves the use of a particular machine or apparatus. The claimed methods of 11-13 could be performed by a human, and thus are not tied to another statutory class.

Specifically, regarding independent claim 1, the steps of determining a mutual information score for a pair of graphoneme units (can be performed by a human figuring out a score), comprising a first graphoneme unit and a second graphoneme unit, using the probability of the first graphoneme unit appearing immediately after the second graphoneme unit (can be performed by a human determining the likelihood of graphoneme appearing immediately after the second graphoneme), the unigram probability of the first graphoneme unit and the trigram probability of the second graphoneme unit (can be performed by a human determining the unigram and trigram probability), each graphoneme unit comprising at least one letter in the spelling of a word; using the mutual information score to combine the first and second graphoneme units into a larger graphoneme unit (can be performed by a human using a score to concatenate the graphoneme units into a larger unit); and in a dictionary comprising

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segmentations of words into sequences of graphoneme units, replacing the first and second graphoneme units with the larger graphoneme unit in each sequence of graphoneme units in which the first graphoneme unit appears immediately after the second graphoneme unit (can be performed by a user referring to a piece of paper that assists in the replacement of the graphonemes).

Specifically, regarding independent claims 16 and 17, the steps of segmenting a set of words into syllable/morphemes using mutual information scores wherein using mutual information scores comprises computing a mutual information score for two letters based on the probability of the two letters appearing next to each other in the set of words and the unigram probabilities of each of the two letters appearing in the set of words (can be performed by a user having a score for letters and determining the probability of two letters appearing next to each other); using the segmented set of words to train a syllable/morpheme n-gram model (can be performed by a human manipulating the syllable/morpheme n-grams on a piece of paper); and using the syllable/morpheme n-gram model to segment a word into syllables/morphemes via forced alignment (can be performed by a human using the manipulations to segment the syllable/morpheme). Therefore, claims 16 and 17 are directed to non-statutory subject matter.

***Allowable Subject Matter***

5. **Claims 7-15** are allowed.

The following is a statement of reasons for allowance:

As for independent claim 7, it recites determining mutual information scores for pairs of graphoneme units found in a set of words, each graphoneme unit comprising at least one letter and each mutual information score for a pair of graphoneme units based on the probability of one graphoneme unit of the pair of graphoneme units appearing immediately after the other graphoneme unit of the pair of graphoneme units, and the unigram probabilities of each graphoneme unit in the pair of graphoneme units; combining the graphoneme units of one pair of graphoneme units to form a new graphoneme unit based on the mutual information scores; and updating a segmentation of a word comprising a set of graphoneme units for the word that includes the pair of graphoneme units by replacing the pair of graphoneme units in the segmentation with the new graphoneme unit. Prior art such as Griniasty and Lawrence teach a similar medium as described above, but does not specifically teach updating a segmentation of a word comprising a set of graphoneme units for the word that includes the pair of graphoneme units by replacing the pair of graphoneme units in the segmentation with the new graphoneme unit. Instead, Lawrence simply describes a single segmentation of each word in the dictionary. There is no mention in any of the cited paragraphs of updating such a segmentation by replacing a pair of graphoneme units in the segmentation with a new graphoneme unit.

Dependent claims 8-15 are allowed because they further limit their parent claims.

***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAKIEDA R. JACKSON whose telephone number is (571)272-7619. The examiner can normally be reached on Monday-Friday from 5:30am-2:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jakieda R Jackson/  
Examiner, Art Unit 2626  
June 16, 2009